

ABSTRACT

The present invention relates to improved methods for making and using bioadhesive, bioresorbable, anti-adhesion compositions made of intermacromolecular complexes of carboxyl-containing polysaccharides, polyethers, polyacids, polyalkylene oxides, multivalent cations and/or polycations. The polymers are associated with each other, and are then either dried into membranes or sponges, or are used as fluids or microspheres. Bioresorbable, bioadhesive, anti-adhesion compositions are useful in surgery to prevent the formation and reformation of post-surgical adhesions. The compositions are designed to breakdown *in-vivo*, and thus be removed from the body.

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10 Membranes are inserted during surgery either dry or optionally after conditioning in aqueous solutions. The anti-adhesion, bioadhesive, bioresorptive, antithrombogenic and physical properties of such membranes and gels can be varied as needed by carefully adjusting the pH and/or cation content of the polymer casting solutions, polyacid composition, the polyalkylene oxide composition, or by conditioning the membranes prior to surgical use. Multi-layered membranes can be made and used to provide further control

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over the physical and biological properties of antiadhesion membranes. Membranes and gels can be used concurrently. Antiadhesion compositions may also be used to lubricate tissues and/or medical instruments, and/or deliver drugs to the surgical site and release them locally.

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